

PLEASE ADD the following claim:

32. The method of claim 11 further packaging the power distribution block and the plurality of connectors in a packaging shell that includes recesses configured to house the power distribution block and the plurality of connectors, respectively.

Remarks

Claims 1-31 stand rejected over a number of references on various grounds. In addition, the Examiner has objected to certain aspects of the drawings and specification.

To simplify the Examiner's task of reconsidering the rejections in light of assignee's remarks below, assignee has left claims 1 and 11 pending without seeking allowance of those claims in this application. Before allowance of the application, assignee plans to put dependent claims 2, 6, 9-10, into independent form.

Claim 26 is amended to correct an obvious typographical error.

OBJECTIONS TO THE DRAWINGS

FIG. 3 is amended to correct an obvious error in which reference numerals 150 and 152 both pointed to the same connector, rather than to adjacent connectors.

Further responsive to the objection in Section 2 of the Office Action, FIG. 4 is amended to add reference numerals pointing out single connector 130 on one side of block 110 and plurality of connectors 152, 154, and 156 on the other side of block 110.

Responsive to the objection in Section 3, FIG. 1 of the drawings is amended to illustrate the single mating interface, labeled with reference number 166, of connector 156. (See assignee's specification as filed, P10/L23-25 and P11/L14-16.)

OBJECTIONS TO THE SPECIFICATION

Responsive to the objection in Section 4 of the Office Action, assignee has amended the cited portions of the specification to be consistent with each other.

Two paragraphs in the "Brief Description of the Drawings" are amended to clarify that FIGS. 4 and 5 are further depictions of what is illustrated in FIG. 1 and other figures, rather than just what is shown in FIG. 2.

Assignee has also added a paragraph narrating what is disclosed in the specification as filed, *inter alia*, at: FIGS. 3-4 and 13; original claims 18-20; and the summary portion from page 4, line 13 through page 5, line 18.

The objection in Section 6 asserts that a number of phrases from the claims are not described in the specification. Assignee notes with appreciation that the Examiner has not rejected the pertinent claims as being unsupported by written description in the specification (indeed, there is no lack of such support), but has merely objected to the specification. Assignee assumes that the Examiner is of the view that the description lacks antecedent basis for the claims' terms. 37 C.F.R. § 1.75(d)(1).

Assignee respectfully disagrees with the objection, however. Below are quotations from portions of the specification that provide the support required by the rules. In the quotations, assignee has added emphasis to phrases that are pertinent to the objection.

[C]onnectors of a first type have two or more mating interfaces . . .
[P3/L6, describing claim 1, line 4, claims 5 and 13, lines 1-2]

. . . while connectors of a second type have just one mating interface [P3/L6-7, describing claim 6, line 1]

[A] connector of the first type can couple power from a single source to multiple conduction paths in the system's distribution block. Separate connectors of the second type can then distribute the power from the conduction paths to multiple outputs. [P3/L7-10, further description for claims 1, 5-6]

Block 110 includes two arrays of mating interfaces. A first one of the arrays (shown at the top of FIG. 13) includes mating interfaces 332, 334, 336, and 338. A second one of the arrays (shown at bottom of FIG. 13) includes mating interfaces 372, 374, 376, and 378. As FIG. 13 illustrates, each mating interface of the first (top) array is coupled to a bus bar (i.e., an electrical conductor) of the first plurality (left sides of columns), which includes the first conductor 342 and the third conductor 344. As

further illustrated in FIG. 13, each mating interface of the second (bottom) array is coupled to a bus bar of the second plurality (right sides of columns), which includes the second conductor 352 and the fourth conductor 374. [Paragraph inserted after the paragraph ending at P17/L10]

REJECTIONS OF CLAIMS 1-17 UNDER § 112

Claims 1-17 stand rejected under 35 U.S.C. § 112 as indefinite due to the phrase “of types” in claims 1 and 11, the intent of which the rejection considers unclear. In response, assignee notes the following regarding FIGS. 1-4, especially FIG. 1:

- Connector 130 is a connector of a first type that includes a plurality of mating interfaces 132-138, as recited in claim 5.
- Connector 156 is a connector of a second type that has a single mating interface 166, as recited in claim 6.

As the specification makes clear, different types of connectors have different numbers of mating interfaces.

Claims 1-10 and 12 further stand rejected under Section 112 as indefinite due to the phrase “can be” in claims 1, 2, 4, and 12. The rejection apparently assumes that the claims use the phrase in an exemplary sense, setting forth limitations that the claims may or may not require. That is not the case, however.

The phrase “can be” in claims 1, 2, and 4 indicates a capability or negative restriction that the system of each claim must have. For example, claim 1 does not read on a system including a power distribution block and “a plurality of connectors of a plurality of types” wherein “connectors of any of the types” cannot “be removably coupled to at least one of the conduction paths at either end thereof.” As a further example, claim 4 would not read on a system meeting the limitations of claim 1 but including fewer “connectors than can be simultaneously coupled to the [block’s] conduction paths.”

Claims 30-31 stand rejected under Section 112 because of an asserted lack of structural relationship between two recited portions and “no electrical connection.”

However, claim 30 specified such a relationship (it is not an electrical one) in its “wherein” clause. In addition, the claim has been amended for clarity in this regard.

CLAIM 2

Claim 2 stands rejected under 35 U.S.C. § 102 as anticipated by U.S. Patent 4,782,245 to Henry. The rejection asserts that, in the system of Henry, “[e]ach end of the conductive path is connected to only one connector.” However, Henry’s FIG. 2 makes it very plain that two connectors can simultaneously connect to “multi-conductor trace” 34 via receptacles 20 and 22. In contrast, claim 2 requires that “each end of each conduction path can connect electrically and mechanically to no more than one connector.” Thus Henry fails to teach or suggest the claimed requirement, and indeed teaches away from it by disclosing a preferred embodiment that does not meet the requirement. Therefore claim 2 is allowable.

CLAIMS 6 AND 14

Claims 6 and 14 stand rejected under 35 U.S.C. § 102 as anticipated by U.S. Patent 4,782,245 to Henry. Neither that reference nor the rejection citing it makes any mention of a connector having a single mating interface, as recited in those claims. Henry discloses connectors having 15 pins (see, e.g., C6/L8), 25 pins (C4/L56), and 34 pins (C6/L6), none which is even close to having a “single mating interface.” Therefore, claims 6 and 14 are also allowable.

CLAIMS 18-29

Claims 18-29 stand rejected under 35 U.S.C. § 102 as anticipated by U.S. Patent 4,372,638 to Sohler. These claims call for specific structural and electrical arrangements of fuse receptacles that are not taught or suggested by Sohler or any other cited reference. The Examiner’s attention is directed to particular limitations of the independent claims in this range, quoted below with emphasis:

a column of fuse receptacles, each of the receptacles including first and second terminals; a first electrical conductor coupling together the first terminals of the receptacles and leading from a first end of the column

of fuse receptacles; and a second electrical conductor substantially parallel in orientation with the first . . . coupling together the second terminals of the receptacles and leading from a second end, opposite the first end, of the column of fuse receptacles. [claim 18]

arranging a plurality of fuses in an array wherein the fuse orientations are substantially parallel to each other; passing electrical current into and out of the array in a direction substantially perpendicular to the fuse orientations; and transmitting a portion of the electrical current through each fuse of the plurality. [claim 24]

a matrix of fuse receptacles having a plurality of columns and a plurality of rows, each receptacle having first and second terminals; a first plurality of electrical conductors coupling together the first terminals of the receptacles in each column; and a second plurality of electrical conductors coupling together the second terminals of the receptacles in each column; whereby the fuse receptacles in each column are electrically connected in parallel. [claim 25]

Sohler discloses nothing about coupling fuse receptacles together. Indeed, the rejections of claims 18-29 fail to show where Sohler or any other cited reference provides any teaching of these claims' limitations, or any suggestion or motivation for a modification or combination to meet the limitations. Accordingly, assignee respectfully requests allowance of these claims.

CLAIMS 9 AND 17

Claims 9 and 17 stand rejected under 35 U.S.C. § 103 as obvious over Henry in view of U.S. Patent 4,372,638 to Sohler. However, the claims now recite "multiple fuses that are interconnected in parallel," an arrangement that neither reference teaches or suggests. Thus claims 9 and 17 are allowable, too.

CLAIMS 10 AND 32

Claim 10 stands rejected under 35 U.S.C. § 102 as anticipated by U.S. Patent 4,782,245 to Henry. That claim, however, recites a packaging shell that includes
recesses configured to house the power distribution block and the plurality of connectors, respectively.

The rejection fails to point out where Henry makes any mention of packaging structure, much less a teaching or suggestion of the packaging shell recited in claim 10. Indeed, Henry includes no such teaching or suggestion. Consequently, claim 10 is allowable along with method claim 32, which also calls for the use of a packaging shell as discussed above.

CLAIMS 30-31

Claims 30-31 stand rejected under 35 U.S.C. § 103 as obvious over U.S. Patent 3,573,704 to Tarver alone. Claim 30 recites

A first portion fabricated from conductive material and including a substantially circular first aperture; and a second portion molded from nonconductive material . . . including a substantially rectangular second aperture that is larger in area than the first aperture.

The rejection acknowledges that Tarver does not meet the “larger in area” limitation but dismisses that limitation as requiring “a mere change in size, which would involve only routine skill in the art.” The rejection fails to show where Tarver teaches or suggests the use of a portion fabricated from conductive material and another portion molded from nonconductive material.

The rejection fails to appreciate the significance of the size difference, substantially coaxial arrangement, and material properties of the first and second portions that are all recited in claim 30. The claimed connector can advantageously accommodate cable having a rectangular cross section while avoiding the need for a square aperture in conductive material. See page 13, line 24 through page 14, line 9 of assignee’s specification.

Because the rejection fails to show how Tarver or any other reference of record teaches or suggests the subject matter of claim 30, this claim is also allowable, as is its dependent claim 31.

CONCLUSION

In view of the remarks above, assignee respectfully requests reconsideration and withdrawal of the rejections against independent claims 18, 24, 25, and 30 and dependent claims 2, 6, 9-10, 14, 17, 19-23, 26-29, and 31. When allowed, assignee intends to put the dependent claims into independent form. Allowance of new claim 32 is also solicited.

Assignee has identified certain subject matter that appears patentable over art of record, although much of it is recited in dependent claims. By arguing art rejections only of certain claims, assignee hopes that prosecution of this application will be somewhat more focused. Assignee is presenting arguments relevant to only those dependent claims being at issue rather than placing them all into independent form. As to the claims not argued, assignee does not seek an indication of allowance at this time, although some of the subject matter may be reinstated.

Please feel free to contact the undersigned if it would in any way advance prosecution of this application.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

PLEASE AMEND the specification by substituting the two paragraphs from page 6, lines 15-16 with the following two paragraphs:

FIG. 4 is a top view of the block and connectors of FIG. [2] 1.

FIG. 5 is an end view of the block of FIG. [2] 1 with a row of fuses shown above the block.

PLEASE AMEND the specification by substituting the first three paragraphs of the section entitled "Description of Preferred Exemplary Embodiments" (page 7, line 14 - page 8, line 11) with the following three paragraphs:

A power distribution system according to various aspects of the present invention provides a number of benefits including convenient reconfiguration of inputs and outputs and compact, convenient arrangement of fuses. For example, FIGS. 1-6 show various views of a power distribution system 100 according to various aspects of the present invention. [s]System 100 of FIGS. 1-6 includes a distribution block 110 having four conduction paths 410, 420, 430, and 440, which are protected by parallel fuses in a convenient matrix arrangement. Conduction paths 410-440 (more clearly depicted in FIG. 4) can be configured to connect a single connector 130 on one side of block 110 to one, two, or more connectors on opposite sides of block 110, depending on the type of connectors used. For example, FIG. 4 shows single connector 130 on an opposite side of block 110 from three connectors 150, 152, and 154. As discussed in greater detail below with reference to FIGS. 7-12 and TABLE II below, the use of a standard distribution block with connectors of multiple types permits a power distribution system according to various aspects of the invention to be easily configured in a number of different ways.

In addition to block 110, components of exemplary system 100 include: a removable cover 114 releasably coupled to block 110 by tabs 115 and 116; a [four-way]

single-input, four-output connector 130 that can be removably coupled (in parallel) to all conduction paths 410-440 of block 110; four one-way connectors 150, 152, 154, and 156 that can each be removably coupled (separately) to conduction paths 410-440; and cables 120 and 140, which are coupled to connectors 130 and 156, respectively. [(Cables that can suitably couple to connectors 150, 152, and 154 are not shown in FIG. 1.)] Also, all cables are omitted from views of FIGS. 2-6 for ease of illustration although such cables are understood to be present in operation.

A power distribution block in a power distribution system according to various aspects of the invention includes any structure suitable to transmit a flow of power among a given configuration of inputs and outputs. The type of power (e.g., hydraulic, pneumatic, electrical, etc.) and configuration of inputs and outputs (e.g., one-to-one, one-to-many, many-to-one, etc.) depend on the particular implementation of such a system. For example, block 110 (as depicted in FIGS. 1, 2, 4-6) is configured for transmission of electrical power from the [a] single input connector 130 (through its four outputs with their four mating interfaces) to four output connectors 150, 152, 154, and 156 (with one mating interface each).

IN THE CLAIMS:

PLEASE AMEND the claims by substituting the following like-numbered claims:

9. The system of claim 1 further comprising a plurality of fuses, wherein at least one of the [each] electrical conductors is [being] interrupted by [one or more] fuses that are interconnected in parallel.

17. The method of claim 16 further comprising interrupting at least one of the [each] electrical conductors by [one or more fuses,] multiple fuses that are [for a given conductor being] interconnected in parallel.

24. A method for transmitting electrical current through a plurality of parallel fuses, the method comprising:

(a) arranging a plurality of fuses in an array wherein the fuse orientations are substantially parallel to each other;

(b) passing electrical current into and out of the array in a direction substantially perpendicular to the fuse orientations; and

(c) transmitting a portion of the electrical current through each fuse of the plurality.

26. The apparatus of claim further comprising first and second arrays of mating interfaces, wherein:

(a) each mating interface in the first array is coupled to an electrical conductor of the first plurality of electrical conductors;

- (b) each mating interface in the second array is coupled to an electrical conductor of the second plurality of electrical conductors; and
- (c) the first and second arrays are disposed at opposite ends of the matrix of fuse receptacles.

30. An electrical connector comprising:

- (a) a first portion fabricated from conductive material and including a substantially circular first aperture; and
- (b) a second portion molded from nonconductive material and including a substantially rectangular second aperture[, wherein:] that [(1) the area of the second aperture] is larger [than the] in area [of] than the first aperture; [and]

wherein

- (c) the first and second portions are arranged such that the first and second apertures are substantially coaxial.